OWNER'S MANUAL

With Step-By-Step Instructions
For Installation And Operation

ULTRA 1000
ELECTRONIC ENERGY MANAGER THERMOSTAT
MODEL TX1000

LUX PRODUCTS CORPORATION

IMPORTANT!
Read and follow installation instructions in manual first.

Thank you for your confidence in our product. We would like to ensure that you obtain the best possible results from your investment.

Before beginning to install your new thermostat, please take time to read this manual and acquaint yourself with your purchase. By following the step-by-step procedures, you will save yourself time, and minimize any chance of damage to the thermostat and systems.

This manual may contain information beyond that required for your particular installation. If you encounter problems, please refer to the Technical Service section of this manual on page 31. Technical Service can be reached at 1-800-421-1130.

Please save this manual for future reference.

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Features of the Lux TX1000 Electronic Thermostat

The TX1000 can be used with most 24 volt gas, oil or electric heating and air conditioning systems or gas millivolt heating systems.

It cannot be used with 120 volt heating systems or multistage heat pumps. Ask your dealer for other Lux thermostats to control those systems.

With the system switch set to HEAT, the TX1000 will automatically change to lower energy saving room temperatures, and then return to warmer "comfort" settings at specified times during the day. There are four programming periods per day. Each can be programmed separately.

With the system switch set to COOL, the TX1000 will change to higher energy-saving temperatures, and return to cooler "comfort" temperatures as you like during the day.

You can use the built-in time/temperature programs, or alter them to suit your schedule. The TX1000 provides separate programming for weekdays, Saturday and Sunday for both heating and cooling. You can override the programmed temperatures for as little as one programming period or for an entire vacation.

A large liquid crystal display shows time, day of the week, and room and set temperatures. It will remind you when the filter should be changed in your blower. Temperature swing adjustment lets you fine-tune your system for maximum comfort and economy.

Two "AA" batteries (not included) are used to retain your time and temperature programs. A 4-minute minimum off time in COOL prevents your air conditioning system from being damaged.

CAUTION!

1. Your thermostat is a precision instrument. Please handle it with care.
2. Turn off electricity to the appliance before installing or servicing thermostat or any part of the system. Do not turn electricity back on until work is completed.
3. Do not short (jumper) across electric terminals at control on furnace or air conditioner to test system. This will damage thermostat and void your warranty.
4. All wiring must conform to local codes and ordinances.
5. This thermostat is designed for use with 24 volt and millivolt systems. The thermostat should be limited to a maximum of 1.0 amps; higher amperage may cause damage to the thermostat.

If you are in doubt, call your utility company.

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Tools Required
Phillips screwdriver (small)
Drill with 3/16" Bit

Thermostat Location
For accurate temperature control and comfort, correct location is very important.

On new installations, the guidelines listed below should be followed as closely as possible. When replacing an old thermostat, install the new one in the same location unless these conditions suggest otherwise.
1. Locate the thermostat on an inside wall about five feet above the floor, where it is easy to install and adjust. It should be in a room that is used often, such as a family room.
2. Do not install it where there are unusual heating conditions, such as direct sunlight, close to a lamp, radio, television, radiator, register, near a fireplace, or other heat producing appliance. Also check for hot water pipes within the wall, or a stove on other side of wall.
3. Do not locate in unusual cooling conditions, such as an outside wall, or one separating an unheated room, or in drafts from stairwells, doors, or windows.
4. Do not locate in a damp area. This can shorten thermostat life due to corrosion.
5. Do not locate where air circulation is poor, such as in a corner, alcove, or behind an open door.
6. Do not install until all construction work and painting have been completed.
7. This thermostat does not require leveling, except for appearance sake.

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Installation
Please read all instructions carefully.

CAUTION!
Before beginning, disconnect power supply to avoid electrical shock, and to prevent damage to the furnace, air conditioner, and thermostat. This can be done at fuse box, circuit breaker, or at appliance.
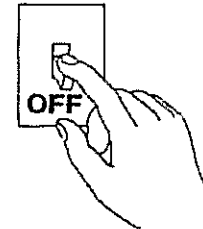

FIGURE 1

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Removing the Old Thermostat

With the electricity to the furnace and air conditioner turned OFF, proceed with the following directions.

CAUTION!
Do not remove any wiring from existing thermostat before reading instructions carefully. Wires must be labeled before removing them.

■ Remove cover from old thermostat. Most are snap-on types and simply pull off. Some have locking screws on the side. These must be loosened.
■ IMPORTANT: When removing wires from their terminals, note letters printed near terminals. Ignore the color of the wires, since these may not comply with the standard. Attach corresponding labels, enclosed, to each wire for identification. Remove and label wires one at a time. Make sure the wires do not fall back inside the wall.
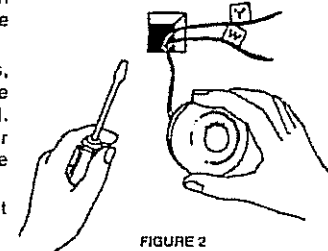■ Loosen all screws on the old thermostat and remove it from the wall.

FIGURE 2

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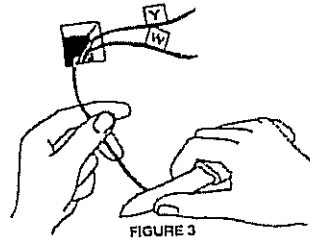■ Strip insulation 3/8" from wire ends and clean off any corrosion.

FIGURE 3

■ Fill wall opening with non-combustible insulation to prevent drafts from affecting thermostat.
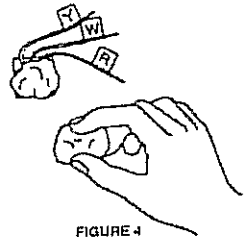

FIGURE 4

Mounting the TX1000 on the Wall
Removing the Cover

■ Remove body from base by pressing button on bottom of thermostat and tilting out and up. Be careful not to drop the body. Do not disturb inner electronic parts. Leave the front door closed while the body is removed from the base.

IMPORTANT: If you are mounting the base to a soft material like plasterboard or using the old mounting holes, the screws may not hold. Drill a 3/16" hole at each screw location, and insert plastic anchors provided. Then mount the base as described below.

■ Hold base against the wall, with the wires coming through wherever it is convenient for wiring. Route wires to below the terminal block. Position base for best appearance, to hide any marks from the old thermostat. Attach base to wall with the two screws provided.
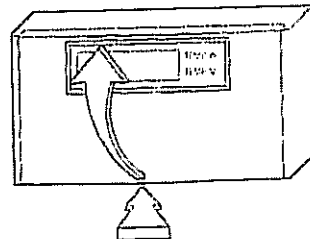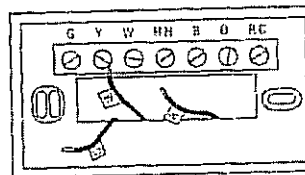

FIGURE 5

FIGURE 6

Attach Wires
ROUTE WIRES TO TERMINAL BLOCK

CAUTION!
Do not allow wires to touch each other or parts on thermostat. Wires must be routed to below the terminal block, or they will hit parts on the cover.

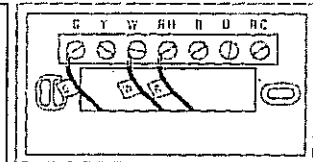*Make sure all 7 electrical terminal screws are tightened securely.*

FIGURE 7

Find the wiring chart that best describes the number of wires and their labels.
Connect the wires as follows:

(A) For a heating system using two wires:
   • Connect the wire marked 5, R, RH, or V to the RH terminal.
   • Connect the wire marked W, H, or 4 to the W terminal.
(B) For a heating system using three wires:
   • Connect the wire marked 5, R, RH, or V to the RH terminal.
   • Connect the wire marked W or 4 to the W terminal.
   • Connect the wire marked G or F to the G terminal.
   • If one wire is marked B (optional with some thermostats), see chart on page 10.

(C) For a heating and cooling system using four wires, use four of the following:
   Be sure the jumper is installed between RH and RC.
   • Connect the wire marked W to the W terminal.
   • Connect the wire marked RC, R, or V to the RH terminal.
   • Connect the wire marked Y, or C to the Y terminal.
   • Connect the wire marked G, or F to the G terminal.
   • Connect the wire marked B, or O (optional with some thermostats) to the B or O terminal respectively.
(D) For heating/cooling system using five wires, use five of the following:
   For two transformer system, remove jumper between RH and RC.
   • Connect the wire marked W to the W terminal.
   • Connect the wire marked RC, R, or V to the RC terminal.
   • Connect the wire marked Y, or C to the Y terminal.
   • Connect the wire marked G, or F to the G terminal.
   • Connect the wire marked B, or O (optional with some thermostats) to the B or O terminal respectively.
   • Connect the wire marked A, RH, or 4 to the RH terminal.

NOTE! If you have an electric system and after installation the blower does not operate, find the electric/gas heat selector on the back of the body. Move the selector to the ELEC position.

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Wiring Charts

Heating Systems

System	Previous Thermostat Terminal Marking	Connect to **TX1000** Terminal	Wire To
2 Wire (includes 2 wire hydronic)	5, R, RH, V, RC	RH	Transformer
	W, H, 4	W	Heating Valve
3 Wire	5, R, RH, V	RH	Transformer
	W, 4	W	Heating Valve
	B	Tape Off*	.*
	C	Tape Off**	**
3 Wire (One Wire is "F" or "G")	5, R, RH, V	RH	Transformer
	W, 4	W	Heating Valve
	G, F	G	Fan Relay

*If replacing Honeywell TM-11 thermostat, tape off "R" wire. Connect wire marked "B" to "RH" terminal.
**If replacing a Honeywell thermostat with a clock wire (C), tape off "C" wire.

Cooling Systems

System	Previous Thermostat Terminal Marking	Connect to **TX1000** Terminal	Wire To
2 Wire	RC, R, V	RC	Transformer
	Y, C	Y	Cooling Relay

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Heating/Cooling Systems

System	Previous Thermostat Terminal Marking	Connect to **TX1000** Terminal	Wire To
4 Wire or 5 Wire	W	W	Heating Valve
	RC, R, V	RH**	Transformer
	Y, C	Y	Cooling Relay
	G, F	G	Fan Relay
	B or O	B or O	Air Cleaner Humidifier or Damper
5 or 6 Wire with Two Transformers*	W	W	Heating Valve
	RC, R, V	RC	Cooling Transformer
	Y, C	Y	Cooling Relay
	G, F	G	Fan Relay
	B or O	B or O	Air Cleaner Humidifier or Damper
	A, RH, 4	RH	Heating Transformer

*Remove jumper between RH and RC.
**Jumper between RH and RC must be in place.

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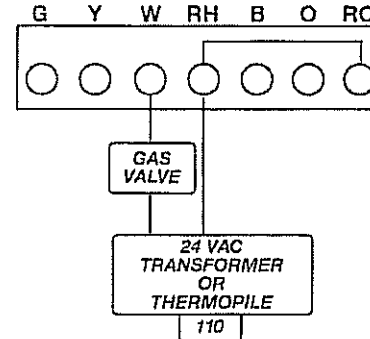TYPICAL HOOKUP FOR 2-WIRE 24V HEATING SYSTEM AND MILLIVOLT SYSTEM

FIGURE 8

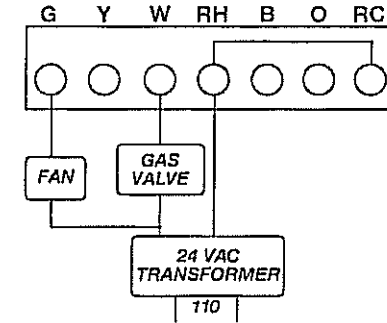TYPICAL HOOKUP FOR 3-WIRE HEAT SYSTEM IF THIRD WIRE IS FAN WIRE

FIGURE 9
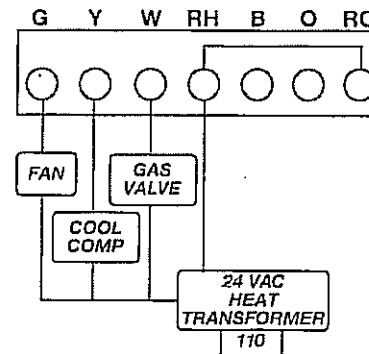
12

TYPICAL COOLING AND HEATING SYSTEM (4-WIRE)

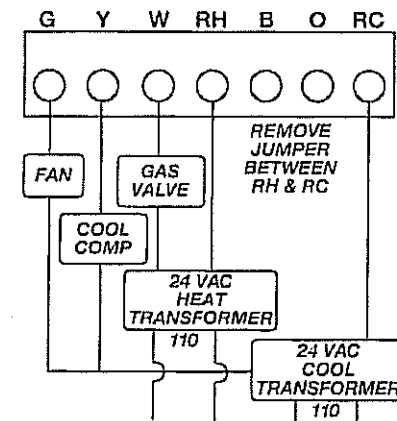FIGURE 10

TYPICAL COOLING AND HEATING SYSTEM (5-WIRE)

FIGURE 11
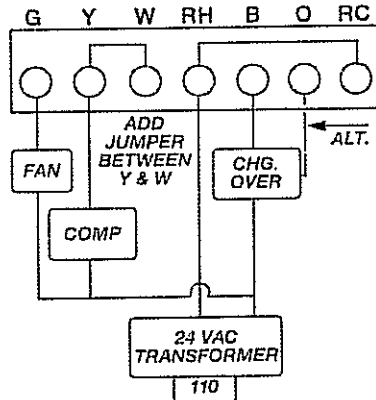
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TYPICAL SINGLE-STAGE
HEAT PUMP WIRING

G   Y   W   RH   B   O   RC

ADD
JUMPER
BETWEEN   CHG.   ← ALT.
Y & W   OVER

FAN

COMP

24 VAC
TRANSFORMER

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FIGURE 12   14

Designation of Terminal Functions

G   Y   W   RH   B   O   RC

└── COOL TRANSFORMER

└── DAMPER OR CHANGEOVER VALVE (POWERED IN COOL)

└── DAMPER OR CHANGEOVER VALVE (POWERED IN HEAT)

└── HEATING TRANSFORMER

└── HEATING CONTROL

└── COOLING COMPRESSOR

└── FAN RELAY
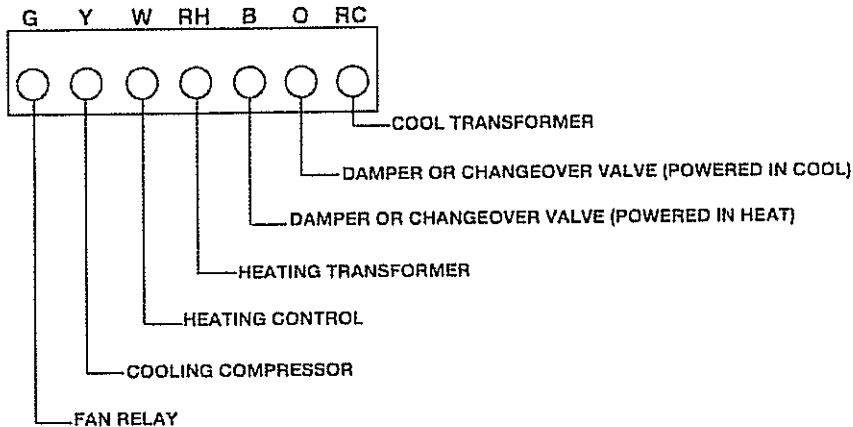
FIGURE 13   15

Batteries

The TX1000 requires batteries to operate your furnace and retain your time and temperature settings. THE BATTERIES SHOULD BE REPLACED ONCE A YEAR or when the thermostat displays the battery indicator in the display.

▯ REPLACE   ▮ Replace batteries when indicator appears.

Bad batteries cause the time and programs to be lost and leak chemicals which can damage or destroy your thermostat.

When replacing batteries, you have approximately 1 minute 15 seconds before programs are lost.

■ Remove fresh batteries from carton before beginning. Remove cover from battery compartment.

■ Install two new "AA" size alkaline batteries in the battery compartment. Observe the polarity marking shown in the compartment. See figure 15.

■ If this is the first time you are installing batteries, the thermostat will display "SUN 12:00 AM". Within 90 seconds the thermostat will begin to display the room temperature alternately with the time.

■ Installation is now complete. Be sure to turn the power back on to your heating and /or air conditioning system.

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Normal Operation

The TX1000 normally displays the time, day of the week and current room temperature. The alternating time and room temperature in the display indicates the thermostat is in the normal operation mode. Above, an indicator will appear — either MORN DAY EVE or NITE. These indicate the current active program which is setting the temperature.

Set the SYSTEM switch to HEAT in the winter to control your heating system, or COOL in the summer to control your air conditioner. The set point temperature will now appear in the right hand side of display. Set the SYSTEM switch to OFF if you want the room temperature left alone (no heating or cooling).

Set the FAN switch to AUTO to automatically run your system's fan during heating or cooling. Set the FAN switch to ON to run your system's fan continuously with or without heating or cooling. Note: the FAN switch only works if your system provides independent fan control (by providing a wire for the TX1000's "G" terminal). All of the thermostat's functions should be accessed from the Normal Operation mode as shown in figure 14.
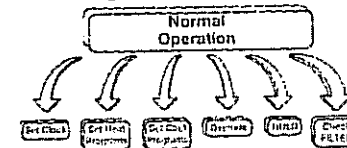
Normal
Operation

FIGURE 14   17

Setting the TIME and DAY

Be sure the time and the current room temperature are alternating in the center of display. This shows you are in the NORMAL MODE. If "OVERRIDE" or "HOLD" is displayed, press the RETURN key to return to the NORMAL MODE.
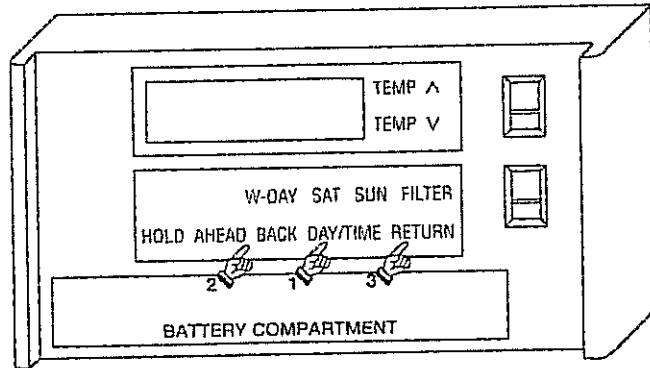

FIGURE 15

Step	KEY number	Set TIME and DAY
(A)	1	Press DAY/TIME once to program the DAY.
(B)	2	Press AHEAD or BACK to change the day.
(C)	1	Press DAY/TIME again to program the time.
(D)	2	Press AHEAD or BACK to adjust the Time. Press and hold either key for rapid adjustment.
(E)	3	When finished press RETURN. The thermostat will return to the NORMAL MODE.

The Built-In Programs

The RESET key sets the built-in heating and cooling programs shown in figure 17. You can use the built-in programs as shown, or change them as you wish. Each day is divided into four periods. Each period has its own starting time and temperature.

Let's look at the heating program as shown in figure 16 for weekdays. At 6:00 AM, MORN begins; The TX1000 turns the heat up to 70° so you wake to a warm house. At 8:30 AM (DAY), the heat is reduced to 60° to save energy while you are at work or school. At 3:00 PM (EVE), the heat returns to 70° so you come home to a warm house. At 11:00 PM (NITE), the heat is turned down to 65° to save energy while you sleep.

	Period	HEAT	COOL
WEEKDAYS preprograms	MORN	6:00 AM 70°	6:00 AM 75°
	DAY	8:30 AM 60°	8:30 AM 85°
	EVE	3:00 PM 70°	3:00 PM 75°
	NITE	11:00 PM 65°	11:00 PM 80°
SAT. & SUN. preprograms	MORN	6:00 AM 70°	6:00 AM 75°
	DAY	6:00 AM 70°	6:00 AM 75°
	EVE	6:00 PM 70°	6:00 PM 75°
	NITE	11:00 PM 65°	11:00 PM 80°

FIGURE 16

Programming your TX1000

You can change the time and temperature programs to suit your schedule. Three separate schedules can be programmed; Weekdays; Sat.; and Sun. Heating and cooling schedules can have different temperatures.

When programming, you will move through a list of programs. The structure of the programs are as follows.

WEEKDAYS		SATURDAY		SUNDAY	
HEAT	COOL	HEAT	COOL	HEAT	COOL
MORN	MORN	MORN	MORN	MORN	MORN
DAY	DAY	DAY	DAY	DAY	DAY
EVE	EVE	EVE	EVE	EVE	EVE
NITE	NITE	NITE	NITE	NITE	NITE

There is a blank programming chart provided on page 32 to write down your programs for future reference.

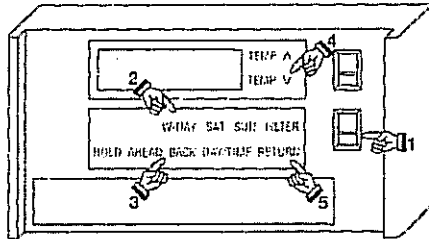NOTE: MORN and EVE must have the same temperature. A different temperature may be selected for heat and cool.

FIGURE 17

Step	KEY number	Programming your TX1000	
(A)	1	Decide whether you will be programming for HEAT or COOL first. Move the MODE SWITCH to the corresponding position. Assume we have chosen HEAT to program first.	HEAT OFF COOL

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Step	KEY number	Programming your TX1000 (con't)
(B)	2	Press W-DAY to enter the Set Programs Mode. The display should look similar to this:
(C)	3	Press AHEAD or BACK to alter the Time Setting. This is the time that the currently displayed period (MORN) will begin.
(D)	4	Press TEMP UP or TEMP DN to alter the Temperature Setting.
(E)	2	Press WEEKDAY AGAIN to move to the next period (DAY) until all weekday periods have been changed or reviewed.
(F)		Repeat Steps B, C, D & E using SAT. and SUN. buttons to review or change weekend programs.
(G)	5	Press RETURN to return to the NORMAL MODE or wait 20 seconds and the thermostat will return on its own.

Note: Each time the Set Programs Mode is entered you will begin with "MORN."

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Additional Features of the **TX1000**.

- Temporary Temperature Override
- HOLD
- FILTER USAGE Monitor

Temporary Temperature Override

This feature allows you to temporarily adjust the Set Temperature *without* altering any of your programs. The override feature will be automatically canceled at the start of the next program.
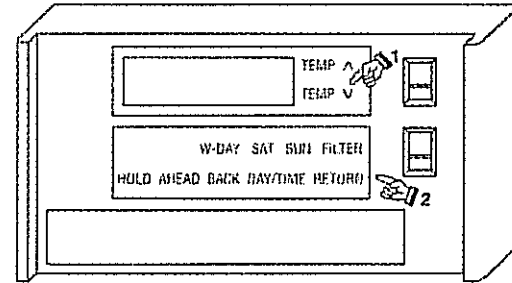

FIGURE 18

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Step	KEY number	Temporary Temperature Override
(A)	2	The thermostat must be in the NORMAL MODE. Press RETURN if this is not the case.
(B)	1	If a higher room temperature is desired, press TEMP UP until the proper temperature appears in the display. If a lower room temperature is desired, press TEMP DN until the proper temperature is displayed. Override will appear in the display.
(C)	2	The override mode will be canceled and the thermostat will return to the NORMAL mode when: • The RETURN key is pressed, or • The next programmed time begins.

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Temperature HOLD

If you are going to be gone for a day or more, the TX1000 can hold a temperature until you return. This feature is the same as temperature override, except, the adjusted Set Temperature is not canceled until it is done manually at the keyboard. This is a very useful feature if you have to leave your house alone for extended periods of time.
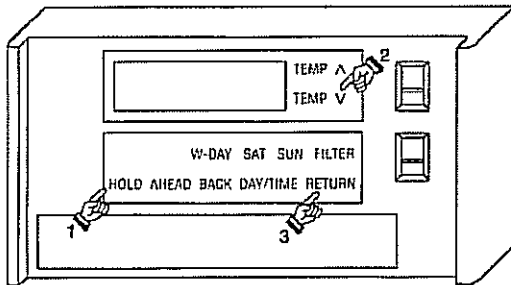

FIGURE 19 26

Step	KEY number	Temperature Hold
(A)	3	The thermostat must be in the NORMAL MODE. Press RETURN if this is not the case.
(B)	1	Press the HOLD button. The "Hold" indicator will appear in the display.
(C)	2	Adjust the Set Temperature with the TEMP UP and TEMP DN keys until the temperature To Be Held is displayed.
(D)	1 or 3	To Cancel the HOLD feature, press HOLD or RETURN again. The thermostat will return to the NORMAL MODE with the current programmed Set Temperature in the display.

FILTER USAGE Monitor

The FILTER USAGE Monitor keeps track of the number of hours since the filter was last changed in your blower unit. When your filter has been in use a total of 250 hours, the "Filter" enunciator will appear in the display. At this point, the filter should be changed and the thermostat's FILTER USAGE Monitor should be set back to zero.
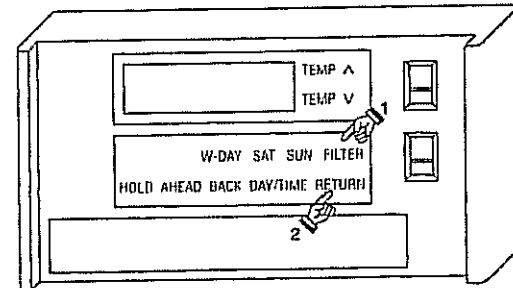

FIGURE 20 28

Step	KEY number	Filter Usage Monitor
(A)	1	Press the FILTER USAGE key to display the number of hours the blower filter has been in use.
(B)	2	Press RETURN to return to the NORMAL MODE.

Setting the FILTER USAGE Monitor to Zero

(i)   When the display is showing the number of hours of use, press the AHEAD key. The display will show '000' hrs.
(ii) If a mistake has been made, the original count may be restored by pressing AHEAD once again.
(iii) Press RETURN to return to the NORMAL MODE.

Changing the FILTER Usage Limit

The FILTER enunciator is preset to appear when your system accumulates 250 hours of run time. If desired, there is a way to adjust the amount of time the thermostat waits to display the FILTER enunciator.

(i)   Press and hold the FILTER key for 2-3 seconds. The FILTER Usage Limit should appear in the display.
(ii) Press AHEAD/BACK to adjust the FILTER Usage Limit. The adjustable range is 100-500 hours.
(iii) Press RETURN to return to the NORMAL MODE.

Temperature Swing

A thermostat works by turning your heating or cooling system ON and OFF at slightly different temperatures. At 70° for example, a ±1° temperature swing turns heat ON at 70° -1 = 69°, and OFF at 70°+1 = 71°.

You can adjust the swing for best comfort and economy. Your system should cycle on about 3 to 6 times per hour. A smaller swing number increases the number of cycles, so room temperature is more constant. A larger swing number decreases the number of cycles, to save energy.

Be sure the thermostat is in the Normal Operating mode. Press RETURN if this is not the case.

Press the AHEAD and BACK keys simultaneously. The current number is displayed (normally "3"). A setting of "3" refers to approximately ±1°F differential. To change it, press TEMP UP or TEMP DN until the desired number is reached 1-9.

When finished, press RETURN.

DAY	PERIOD	HEAT		COOL	
		TIME	TEMP.	TIME	TEMP.
MON. THRU FRI.	MORN				
	DAY				
	EVE				
	NITE				
SAT.	MORN				
	DAY				
	EVE				
	NITE				
SUN.	MORN				
	DAY				
	EVE				
	NITE				

Static Electricity

The TX1000 is protected against normal static electric discharges. However, in extremely dry weather you should touch another metal object before the TX1000 to avoid potential loss of programs.

Technical Service

If you have any problems installing or using this thermostat, please reread the instructions carefully. Remember that the thermostat must be in the Normal Operating mode before making changes. Be sure the batteries are good, and installed correctly. Press the RESET button if erratic operation is encountered.

If you still have problems, call Technical Service toll-free at 1-800-421-1130 between 9:00 AM and 4:00 PM Eastern Standard time, Monday through Friday. Please refer to model TX1000. This should be done before returning the thermostat as defective.

Electronic Thermostat Warranty

Limited Warranty: If this unit fails because of defects in materials or workmanship within one year of date of original purchase, Lux will, at its option, repair or replace it. This warranty does not cover damage by accident, misuse, or failure to follow installation instructions. Implied warranties are limited in duration to one year from date of original purchase. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Please return malfunctioning or defective units to the participating retailer from which purchase was made, along with proof of purchase. Please refer to page 31 before returning thermostat. Purchaser assumes all risks and liability for incidental and consequential damage resulting from installation and use of this unit. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. Applicable in the U.S.A. only.